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DHOLE / ASIAN WILD DOG
(Cuon alpinus)

Photo Credit : Dayaal G.

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EDITORIAL

The famous Roman emperor and philosopher, Marcus Aurelius of '*Meditations*' fame, is supposed to have said something to the effect, that goes like this - 'You have power over your mind — not outside events. Realize this and you will find strength.' Never has a philosophy and the way we perceive and manage events of the outside world been tested as it has been, through these covid years. With 2021 coming to a close, a new mutant variant, Omicron, continues to cast a shadow of doubt, as we head into 2022. And through it all, we maintain hope and optimism to work our way, as we bring out this edition of the newsletter.

Mammals, big and small, take center stage in this edition as we take you on a journey into the landscape with the obvious and the not-so-obvious. Explore the tea and tea-adjacent landscapes, with Anita Varghese, to know about the diversity it can harbor; bringing a breath of fresh air in a landscape known for human-induced land-use changes over the centuries. And in the same breath, Ryan Sathish takes you down the other end of the spectrum on how interactions play out between humans and large mammals such as the Gaurs, as we negotiate these shared spaces.

Moving from the large to the small, you will find a few of the not so easily spotted smaller mammals of the Nilgiris in this edition - from the arboreal marten to the ground-dwelling porcupine and the small cats in between. Observe them and become a part of a citizen science initiative on small mammals. In the Natural History Notes section, join the tiny Kashmiri Flycatcher, as it makes its migratory journey across the Indian subcontinent, every year, between the north and the south.

The Nilgiri Biosphere Reserve spills into 3 states of the south, and in this edition, we take you into Kerala, where Asish writes about the new research happening on the Lion Tailed Macaques in Nilambur; while Mohammed Rafi speaks to a naturalist, Mr. Manuel PJ to know about organic farming and his famous tuber nursery.

The diary of the NNHS captures our tenacity through the year, as we maneuver through digital and physical spaces and conversations in our attempt to engage with and churn out stories of natural history for our communities and citizens.

The covid pandemic has clearly put out a clarion call for the human race, and respond we will and must. We will need to heed Marcus Aurelius and find the inner strength as a race to march on. And, while at it, in a lighter note, as Luis Miguel said, "I maintain my sanity by keeping my distance'; practice safe distancing and covid protocols, and may the force be with us.

Sharada Ramadass,
NNHS Co-ordinator

SMALL MAMMALS OF NILGIRIS

Text collated from Vivek Menon's book titled 'Indian Mammals'

By Natasha Rajpurohit

Chandrasekar Das

Martes gwatkinsii

Local name: Nilgiri Marten

IUCN status: Vulnerable

Habitat: Shola grassland and high altitude evergreen forests

Distribution: Endemic to the Western Ghats

Description: Nilgiri marten is elusive and rare, dark brown color from head to rump with pale yellow to orange around the neck. They are similar in appearance to the Yellow-throated marten but only larger and have a prominent frontal concavity and yellow color restricted to the underside of the neck and chest. They are usually mistaken for Asian Giant squirrels but can be distinguished by their all-black tail.

Diet: Omnivore. Feeds on birds, small mammals, insects, seeds and fruits, etc.

Natasha Rajpurohit

Ratufa indica

Common name: Indian Giant Squirrel

IUCN status: Least concern

Habitat: Dry-moist deciduous, semi-evergreen, and evergreen forests and dry scrub

Distribution: Southern and central India

Description: Indian giant squirrel has 2-3 color patterns of black, brown, and maroon color shades.

The back is complete maroon with cream and maroon patches on the belly, under-parts, and forelimbs. This rodent has a pale face with pink lips and nose and pale cream ears. The eyes are colored in the bright dark or light brown. The long tail is light brown with a creamy white tip.

Diet: Omnivore. Feeds on flowers, fruits, nuts, eggs of birds, and insects.

Shan

Prionailurus bengalensis

Common name: Leopard cat

IUCN status: Least Concern

Habitat: Grassland, scrub, and moist deciduous forests.

Distribution: Northern and northeastern parts of India and the Western Ghats in southern India.

Description: It is about the size of a domestic cat and has a similar pelage pattern to a leopard. The sides, limbs, and tail are covered by rosettes or spots. The dorsal pelage colors range from pale slight brown to yellow-red to pale grey whereas the ventral side is white and spotted. The head is relatively smaller, marked with 2 dark stripes with a narrow white muzzle, and two parallel lines run from the eyes to the nose.

Diet: Primarily Carnivore. Feeds on small terrestrial vertebrates, insects, birds, snakes, etc.

Rejaul Karim

Viverricula indica

Common name: Small Indian Civet

IUCN status: Least Concern

Habitat: Grasslands, savannah, deciduous, semi-evergreen, scrub forest.

Distribution: Across Asia

Description: It has brownish-grey to pale yellowish-brown fur having 6 – 8 stripes on the back towards the tail with brown or black bands on the tail. There are 2 dark stripes from behind the ear towards the shoulder and one crossing the throat on both sides. The feet are dark brown or black in color. Small Indian civets are easily distinguished from other civets by their size and a smaller gap between ears.

Diet: Primarily carnivore. Feeds on birds, insects, rodents, fruits, roots, etc.

Chandrasekar Das

Felis chaus

Common name: Jungle Cat

IUCN status: Least Concern

Habitat: Grassland, shrubby woodlands, and dry deciduous forests.

Distribution: the Middle East, Indian subcontinent, central and southeast Asia, Sri Lanka, and southern China.

Description: The jungle cat has uniformly reddish-brown color or grey fur with no spots. They have slim faces with white lines above and below eyes and dark spots between eyes and nose. The tail has rings along the length and a dark tip.

Diet: Primarily carnivore. Feeds on rodents, birds, snakes, hare, insects, etc.

Aditya Madhav

Hystrix indica

Common name: Indian Crested Porcupine

IUCN status: Least Concern

Habitat: Grasslands, Tropical moist and dry forest, scrubland, and rocky areas.

Distribution: Southeast Asia and part of the Middle East.

Description: The average length is about 70-90cms. Their hairs are modified into layers of spines. The quills are brown or black with white bands. The quills are about 15-30 cm long and are used to alarm potential predators. The tail appears to be white in color with shorter spines. The feet are broad with long claws for burrowing.

Diet: Primarily Herbivore. Fruits, vegetables, grains, small vertebrates, and insects.

iNaturalist is a social network of naturalists, citizen scientists, and biologists built on the concept of mapping and sharing observations of biodiversity across the globe. If you are from the Nilgiris, please join the 'Small Mammals of the Nilgiris project and upload your sightings. This helps us map the vulnerable small mammals and study them.

About the Author

Natasha is a wildlife ecologist and staff at Keystone foundation.

BEASTS IN OUR BACKYARD

By Ryan S

Gaur calf trying to cross the road as a car blares its horn. Credit: Pranav Suresh.

Growing up in the Nilgiris, wildlife has always fascinated me. From waking up in the middle of the night to my dog barking at a big cat, to walking out the door, sleepy eyed in the morning with a cup of tea just to run back in realizing there is a herd of Gaur all around the house. Life in the hills is not comparable to any other. We live and coexist with the small endangered starry eyed bush frog (*Raorchestes signatus*) on our walls to the mighty Gaur (*Bos gaurus*) mowing our lawns every once in a while. Every day the local farmers complain about their crops being eaten by either Gaur or Boar, and during my bird watching walks I would see carefully hidden snares around some estates. The reasons why negative interactions occur between human and wildlife are plenty. I have heard stories of poisoning and hunting all because the poor animal accidentally strayed into a field. Unfortunately I even witnessed a man smash a montane trinket snake (*Coelognathus helena monticollaris*) to death in the middle of the road because "snakes are dangerous and attack people" according to him.

Montane Trinket smashed to death. Credit: Ryan S

During the first year of my Bachelors in Zoology I decided that it would be a good idea to conduct a small study on why there is so much negative interaction between humans and wildlife in The Nilgiris and that led me to a deeper understanding of the problem. The study was done for over a month to understand the depth of the problems between humans and wildlife in the Nilgiris. Along with a few colleagues, I conducted over 50 interviews in areas all over the Nilgiris. Our major study region was in the small town of Kotagiri and some interviews were conducted in areas of Ooty and Kil Kotagiri. The participants were asked a standard set of questions which gave us a clear image of what the issues are, which animals cause the highest conflict, which areas are more prone to conflict and why the conflict continued. Most of the people who were interviewed either lived or worked near a forest or shola patch. The demographics of the survey consisted of tea pickers, plantation workers, plantation owners, farmers, jeep drivers, rural health care workers, government school teachers, political

party members, shopkeepers, wildlife photographers and victims of direct negative interaction.

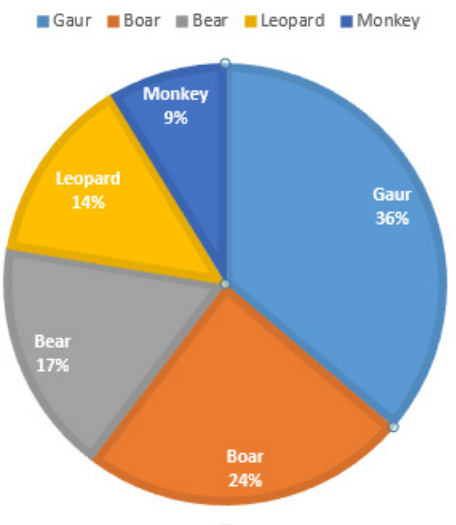
The Western Ghats is one the few biodiversity hotspots in the world and the Nilgiris is a part of this region. The habitat is of huge importance as it provides life to a large number of organisms including humans. From our study we understood that this gloomy situation between man and wildlife is ever growing and has reached a point where either the life of the human or the animal is in danger. The key reasons for the increase and rise in negative interaction between humans and wildlife was found to be due to many reasons.

The Nilgiris is a major tourist attraction and every weekend we see a huge surge of traffic from the plains of Mettupalayam / Coimbatore and from the Masinagudi – Mysore side as well. During this time the number of roadkills increase, the amount of trash strewn on the sides of the roads triples, resorts are full, and there is excess light and noise pollution. Most resorts in the Nilgiris do not have proper means of discarding their waste. This attracts wild animals such as Jungle cats, Sloth bears, Macaques and in some cases even Leopards. With more and more plantations and buildings coming up leading to fragmentation and loss of forests, animals such as the wild boar and the Indian gaur have been pushed out of their territories, now settling and grazing among plantations and in close proximity to human settlements. This causes a negative interaction between the farmers, tea pickers, people who walk to commute and the animal. When the situation gets intense between the two sides it almost always ends up with a serious injury or even death of either man or the animal.

From the discussions with the local people we understood that they were unsure of the reasons for these animals to enter human settlements, they did not have ethical solutions to prevent this and in many cases the people had preconceived ideas about behaviour and nature of wild animals based on stories and incidents that they had heard. It then became clear that one of the main reasons for this squabble between man and animal was simply the lack of education of awareness on the animals.

Close proximity between humans and Gaur. Credit: Pranav Suresh

A good example would be the killing of the previously mentioned montane trinket snake to death assuming that it was a venomous and dangerous snake but this is not just a one-time thing, as on a daily basis, we witness people throwing rocks at gaurs, honking and chasing away wild boars. Harming humans, destruction of property, raiding agricultural fields, entering of homes and kitchens and snatching of pets and cattle are all classified as negative interactions. Using this classification, the pie chart below was made based on all the interviews that were conducted and it gives us an understanding of which animals are mostly caught in the middle of this ongoing problem. We can see that most people of the region mention the Indian gaur (*Bos gaurus*) and it represents almost 40% of the total negative interactions between man and animal.



Representation of different animals and negative interaction


Coexistence. Credit : Ryan S

Though there are many checks in place today to try and curb the negative interaction between man and wildlife in the Nilgiris, it is of utmost importance to educate the younger generations on how to co-exist with the wildlife around us. From basic identification of plants and snakes to understanding the importance of our shola forests and their importance. Our tourist and resort problems may also contribute less to this negative interaction if more sustainable and ecology-environment conscious tourism guidelines are followed. Setting up fences and putting up sign boards may be a quick fix but in the long run we, the people of the Nilgiris need to understand that without all these amazing creatures around us, home will never be home.

We need to ask ourselves, are they the beasts in our backyard or are we the beasts in theirs?

About the Author
Ryan S is a resident of Kotagiri. He is currently pursuing his masters in Conservation Practice from ATREE in Banglore and largely instrested in Biodiversity around the Nilgiris.

TEA PLANTATIONS AS IMPORTANT CONNECTIONS IN A FRAGMENTED LANDSCAPE

(With inputs from Prasad Gaidhani when he was staff at Keystone Foundation)

By Anita Varghese

In the context of India, with a population of 1.3 billion human beings, the subcontinent is still home to the largest population of tigers in the wild. In the past several decades since independence, we have not recorded the extinction of any species (this may also be due to insufficient research). New species are being discovered and described every year. Unique biodiversity regions like the Western and Eastern Ghats, Indo Himalayan forests, North Eastern ranges, etc. are global heritage sites that host a diversity of endemic and rare flora and fauna. The forest cover has not declined though I will stay out of discussing the quality of forest habitats. All is to say that India enjoys a fair amount of biodiversity despite its high density of people and dependence on natural resources for development. What is it that enables this level of biodiversity richness to co-exist with human development?

Taking the example of a 5500 sq km that form the contiguous conservation landscape of the Nilgiri biosphere reserve (NBR), located in the south-west part of the Western Ghats, more than 70% of this landscape is under forest cover and enjoys protected area status. There are tiger reserves, national parks, wildlife sanctuaries, and reserved forests within the NBR. The plantation landscape is an estimated 14% of the region (Prabhakar & Pascal 1994). The lack of a transition zone that connects protected areas potentially leads to rising human-wildlife conflict and permits development activities that are at cross purposes with the goal of a biosphere reserve (Puyravaud and Davidar, 2013). This leads one to ask the question what role do plantations play in this regard – how have they facilitated corridors for biodiversity? In a study that was done to look at the regeneration of Shola species, results showed that tea plantations enhance germination and support pioneer and early successional species (Mohandass et al 2016). In another study, researchers observed wild mammal movement in tea plantations of Valparai and Nilgiris (Gokula V., & Thangatamil C., 2014) to find that all major carnivores and other mammals were using this landscape. The animals were observed using the plantations as a corridor that connects forest fragments. Kalam et al (2020) used a generalized linear model to assess whether the distance to protected areas, elevation and plantation size influenced species presence and the effect of these variables and wildlife incidents on support for conservation. Their results show that plantation management (62%) supported wildlife conservation, and support increased with decreasing plantation size, increasing distance to protected areas, and with a higher number of species reported, but decreased with increasing incidents of wildlife damage. These studies indicate that plantations do play a significant role in supporting biodiversity and that wildlife has adapted to the presence of these modified landscapes.

Large herbivores like Gaur (*Bos gaurus*) are now a common sight in tea plantations and use the habitat to move between forests or tree cover areas. Leopards and small cats have also been reported from the estates. In a rapid assessment using camera traps and foot surveys around the Keystone Foundation campus at Kotagiri, a study was conducted from 20 May 2021 to 30 June 2021 at 5 camera trap locations. Camera trapping was done using digital cameras with infra-red sensors for motion detection. We selected 5 target sites based on the previous sighting records by Keystone foundation staff members. We monitored the area for 205 camera trap nights and camera traps were set at the height of 2-2.5 feet and in some sites height and angle were set as per the terrain requirement. Cameras were open for 24 hours with a time delay as fast as possible between two captures. Cameras were set on image setting with one camera on video mode. The date and time of animal sighting were automatically recorded by the camera on the image. We covered different habitats which include

tea plantations, water holes, alongside the path, and some fruiting trees. Apart from the camera trap survey we also recorded the secondary information on animal sightings on campus from staff members.

After successful camera trapping for 41 days, 205 camera trap nights, and 6000 hours we recorded a wide range of animal diversity on the campus. 12 mammal species belonging to 11 families were recorded on campus out of which 6 species belong to the small mammal category. Details of the species caught on camera are given in Table 1. Apart from wildlife we also observed the movement of domestic cats and stray dogs on the campus which can also be considered as an attraction for large carnivores like leopards.

Animals like Gaur, wild boar, Barking deer, Sloth bear, Bonnet macaque, Black nape hare, and Indian grey mongoose showed the activity pattern for daytime and night time as well. Whereas, Leopard, Jungle cat, Small Indian civet, and Porcupine showed activity patterns for nights only. Sightings for Malabar giant squirrel were recorded for daytime.

When I came to the Nilgiris for the first time I moaned with my entire ilk of ecologists about the zero diversity tea plantations. I was constantly reminded by my city-dwelling family and friends how lucky I was to be surrounded by so much greenery. To my ecological eye, they were no more than green deserts and nowhere near the rain forests of New Amarambalam that I had just returned from. Many ecologist friends back then gave up drinking tea to protest against the destruction that this mono-crop had posed to biodiversity. Then of course ecologists have other brews to keep them happy!

The silent sea of green became my everyday scene – from the windows of my home to office to indigenous villages and forests where I worked. In my work which looks at the relationship between communities and their environment, I use the socio-ecological framework to make sense of these interactions. I have learned over the years that only when a certain balance is struck between the social and the ecological do both benefit, especially in a human modified and dominated landscape.

More studies need to be taken upon aspects of biodiversity in these plantation landscapes. They play an important role in connecting fragments as mentioned earlier in the article. Today we see that many of the smaller tea plantations and even larger ones are being sold as real estate leading to them being further fragmented. The plantations provided an important connection for wildlife between forest fragments but what will happen when these connecting plantations get fragmented? Will the much-needed connecting transition zones get cut off and will it lead to more tensions between human beings and biodiversity? One hopes not!

Table 1 - List of species photographed using camera traps, Kotagiri.

Sr. no.	Family	Common name	Scientific name
1	Bovidae	Gaur	*Bos gaurus*
2	Cervidae	Barking deer	*Muntiacus muntjac*
3	Cercopithecidae	Bonnet macaque	*Macaca radiata*
4	Felidae	Leopard	*Panthera pardus*
5	Felidae	Jungle cat	*Felis chaus*
6	Hystricidae	Porcupine	*Histrix indica*
7	Herpestide	Indian grey mongoose	*Herpestes edwardsii*
8	Leporidae	Black nape hare	*Lepus nigricollis*
9	Sciuridea	Malabar giant squirrel	*Ratufa indica*
10	Suidae	Wild boar	*Sus scrofa*
11	Ursidae	Sloth bear	*Melursus ursinus*
12	Viverridae	Small Indian civet	*Viverricula indica*.

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About the Author

Anita is an Ecologist and Director of Biodiversity Conservation program at Keystone Foundation.

THE LION-TAILED MACAQUE

PROJECT IN NILAMBUR, KERALA

By Asish Mangalasseri

Photo: Chandrasekhar

It was astonishing to know that there are lion-tailed macaques(LTM) in Nilambur. Even as a native living near this beautiful place, I never had the fortune to see one here. I think it is the same case with most of the people here. Or, like many others in the region, we might have mistaken a LTM with a Nilgiri langur when we might have spotted one. If you ask the locals in the town area of Nilambur whether they know that there are LTMs in here, most will reply, "they are there in Silent valley only, no?". Somehow everyone here associates LTMs with Silent Valley only (The LTMs were one of the icons in the successful 'Silent Valley Environmental movement').

After we intentionally started searching for LTM's presence, we learned that they sometimes pass across the busy interstate highway of Nadugani Ghat road in large groups. Some indigenous elders from forest villages confirmed that there are LTMs in their forests. But many of the youth there were still confused between Nilgiri langur and LTMs. A few villagers also confirmed that LTMs were present in the past but not anymore in their forests. Some elders remembered their presence because, in the past, they had hunted them for meat too.

Photo: Chandrasekhar

Lion-tailed macaques (*Macaca silenus*) (LTMs) are endemic primates to the Western Ghats in India. They are assessed under the 'endangered' IUCN category, with around 3500 individuals only in the wild. They are members of the family – Cercopithecidae(old-world monkeys), the largest family in the order Primates. Old-world monkeys lack prehensile tails compared to new-world monkeys. The body of LTMs are covered with black hairs except for the butt and the long silver-white hairs around, resembling the mane. Their adults will have an average size of 40-60 cm (head-body length). Adult males are larger

than females, and adult males can weigh up to 15 kg. They get their name from their tail resembling that of a lion's. The tail is small, around 25 cm long, with a tuft of hairs at the end. Male LTMs also have long, sharp canines, which they show as a threat display.

LTMs are endemic to the tropical evergreen rainforests and monsoon forests in the Western Ghats. Their population is restricted to three states- Kerala, Tamilnadu, and Karnataka. They became locally extinct from Goa and Maharashtra by the severe loss of their wet evergreen forests during the 1950s. In Kerala, they are currently confined to higher elevations due to habitat destruction.

LTMs live in a unimale-unifemale social system with 8-40 individuals in a group. Each group will have only 1-4 adult males. Males leave the group after they reach maturity. Then they join male-only groups and visit other groups looking for an opportunity to overthrow the existing alpha male of that group. They are diurnal and primarily arboreal mammals who spend most of their time in the canopies. Their home range varies from 1.25 sq. km to 5 sq. km. They are omnivorous, and their resources are scarce and spread. They spend most of their time foraging and moving in search of food. They have an essential role in seed dispersal in their habitat and might also be acting as a pollinator for some plant species.

Habitat fragmentation, poor population growth, and hunting are the main threats to LTM. Their sparse and spread resources also restrict their habitat further. The female in LTM has a lifespan of 18-20 years and gives first birth at the age of 6.5 years with a 30-36 month interbirth interval. It results in very few offspring in one female's lifetime. As a result, even in ideal conditions, their population can only remain steady.

It is crucial to identify the LTM population status and the quality of their preferred habitat in the Western Ghats if we want to conserve them. Systematic population studies are lacking across many regions. Recently some new LTM troops have been discovered from outside the protected areas in Karnataka. In Valparai, canopy bridges have been tried across busy roads to connect the habitats and increase the safety of LTMs while they cross the road, preventing road kills. For the long-term conservation of these species in the wild, it is critical to protect their remaining habitats, restore destroyed habitats, and create corridors to connect fragments.

Previous records from Nilambur confirm the presence of LTMs in these forests. According to the 'LTM population and habitat viability assessment workshop report' of 1995, at least 1-4 groups of LTMs are there in each isolated forest patch of Manjeri Kovilakam and Nadugani in Northern Nilambur. The informal inquiry identified most of those isolated forest patches themselves are not there any more now. But villagers in North Nilambur confirmed that there are LTM groups in some of the Northern Nilambur forests. In the same report, it is reported that the largest population identified in Kerala State at that time was from Silent Valley- New Amarambalam forests. New Amarambalam forests recently became Karimpuzha Wildlife Sanctuary in Nilambur. 30 groups of LTM were reported from that continuous forest. Apart from degradation and habitat fragmentation, hunting and poaching were also reported in these populations at that time. In a study carried out by Easa et al. in 1997, six troops of LTMs were reported from New Amarambalam forests (currently Karimpuzha Wildlife Sanctuary) close to Silent Valley in Nilambur South and none from Nilambur North region. Later in the 2002 study carried out(in 1997-2000) and published in KFRI research report on 'the biodiversity of New Amarambalam Reserve forests in Nilambur', nine troops of LTM were estimated from locations such as Manakadavu, Onakkathodu, Pullukuthimala, Gonianmala, Nanjanmala, Poochapara North, Poochapara South, and Poochapara and Gonianmala South. No studies related to LTMs have been carried out in the Nilambur region since that.

It is crucial to reassess the population status of LTMs in Nilambur if we have to conserve them in the region. In Nilambur, we will be assessing the population status of LTM by using ecological and social survey techniques. Since there are no reports or studies on LTM in Nilambur from the last two decades, the memory recall and knowledge of indigenous people living in these forests are significant. We will be including local indigenous communities in the different steps of this conservation project. The Nadugani Ghat road region connects the Nilambur north and Nilambur south forests and is an essential corridor for LTMs. We will be monitoring the road to find their road crossing locations and assess their safety. Appropriate conservation measures will be implemented if they are found crossing across the road by walking through the road rather than over the canopy. We will also be planning future conservation activities for the LTM in Nilambur with community participation. The project team won the 2021 Future conservationist award by Conservation Leadership Programme for the same project.

About the Author
Asish M is a staff at Keystone Foundation and works majorly on Community Based Conservation in Nilambur.

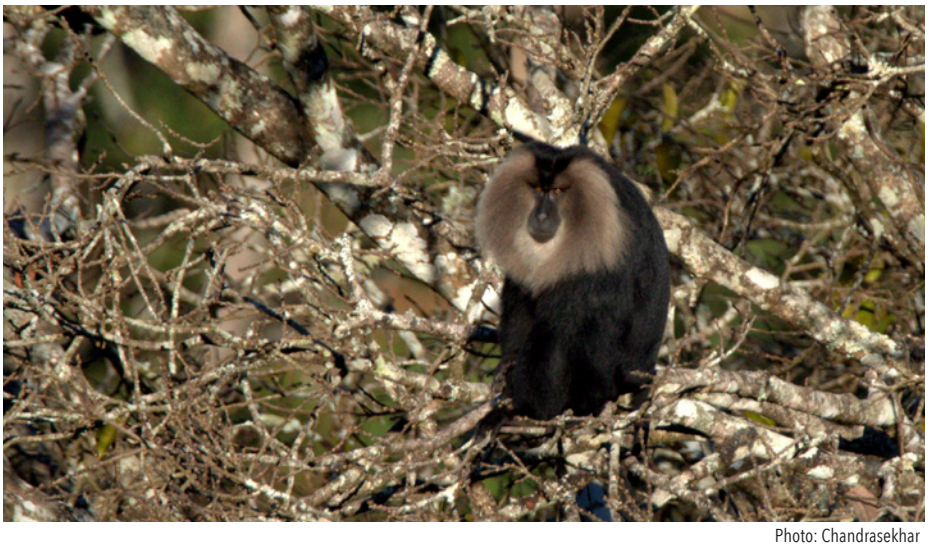
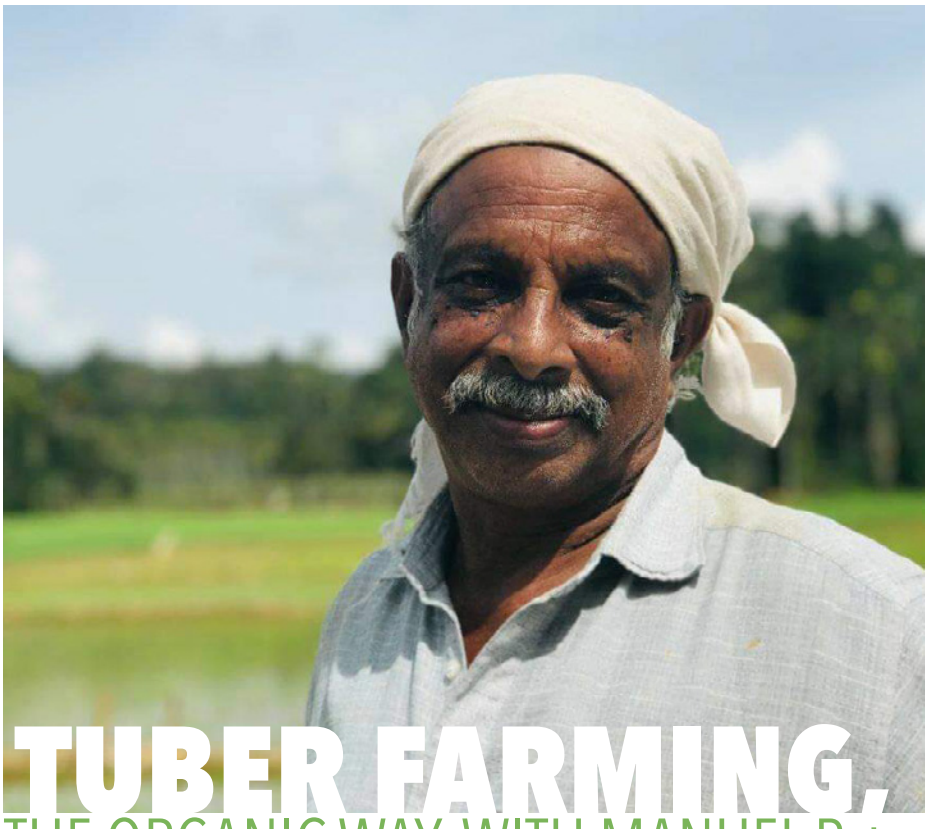


Photo: Chandrasekhar



TUBER FARMING, THE ORGANIC WAY, WITH MANUEL P J

As told to Muhammed Rafi and translated by Ramachandran

Manuel P J is an organic farmer from Orapp (Ellumannam) village in Mananthavady Block Panchayath, and is widely known for his large collection of tuber varieties. He cultivates and preserves over more than 70 varieties of edible tubers on his farmland. He has also been an integral part of preparing the 'people's biodiversity register' for the Edavaka Grama Panchayath in 2008. Numerous programs and training on biodiversity conservation for the farmers as well as school students in Wayanad were held under his leadership. Furthermore, he heads a farmers group called 'Eco-friends', based at Ellumannam, that promotes organic farming activities and maintains a seed bank (mainly with tubers) with support of Keystone foundation.

Recently, Mr. Muhammed Rafi (Md. Rafi), from Keystone Foundation, got in touch with Mr. Manuel P J., to understand about his traditional knowledge on farming and current agricultural practices.

Excerpts of Interview (as told to Md. Rafi)

Md. Rafi: Were you born to a family of farmers or was there a turning point in your life that took you into farming?

Manuel PJ: I come from a farming family, who migrated to Wayanad in search of land for cultivation. Traditionally, our family has been involved in producing only food crops and I follow the same traditions. Therefore, my entry into the business of farming is not an unexpected one. Though farming is my primary passion and occupation, I have been associated in several socio-cultural affairs in my locality and beyond.

Md. Rafi: We understand that PJ Manuel is not only a well known farmer among the agriculture world of Kerala, but someone who is known for his various contributions to other socio-cultural fields as well. Could you please explain your contributions to non-agricultural arenas?

Manuel PJ: I became a part of the library in my village soon after I passed out of SSLC in 1964. It was a reading centre with no room of its own, and just two tables and a shelf of books. I started my social activism from this small library. I was the secretary of the library for a long period. We actively organised many club level sports events in the surroundings of my village in participation with different clubs in the district.

Later, we formed an Arts and Sports Club called 'Santhosh' as part of the library, and organised many events. We formed an amateur drama group and participated in many competitions across the Wayanad district and even won several prizes. Through theatre, we attempted to impart good social messages to the society. Our dramas were very well received by the people and had good public acceptance like a professional drama group.

With time, the nature of my social engagements also changed. I started training school children on drama classes for free for several years, benefiting many economically deprived students from government schools. We ran art campaigns against abuse of drugs, smoking and alcohol; and public demonstrations, held in the form of a traditional performing art form called 'Villadicham Patt'. The story of that performance art was written by me called 'Peeliyude Pankappad' (Confusions of Peeli) based on the life events of a migrant worker. I have also written a drama called 'Bhoomika' on the theme of nature for the students which had later won many prizes in school drama competitions. Nowadays, I am focusing more on writing about different aspects of agriculture. I wrote a book on different varieties of tuber crops called 'Nallekkayi Prakrithikkayi' published

by Nallabhoomi. One more book called 'Mannarivu' that means 'Knowledge of Earth' has gone to print. Meanwhile, I am also writing on various other aspects of agriculture.

Md.Rafi: Coming back to the subject of agriculture, could you speak of the advantages and challenges faced by you being a farmer?

Manuel PJ: The farming sector is going through a great crisis. A farmer who cultivates using chemical fertilizers, pesticides etc. will never get the kind of psychological pleasure that an organic farmer gets by conserving the earth and producing good food for others. Such farmers might get money, but money would not give happiness. In my experience, most of them use the money thus earned, by spending in hospitals when they become older.

When I speak about the crisis I mainly mean the cheap rates received by farmers for their products and crop loss due to various diseases and pests. Non-availability of laborers is one of the main challenges in the agriculture sector these days in Kerala. The implementation of the MNREGA schemes in the rural areas has made many people lazy who otherwise have good potential agriculture skills. They prefer to waste their time working on such odd works that require not much labour or effort. Another challenge is that the methods we introduced to increase the production have caused the deterioration of the fertility of the land; increased the potency of the pests and increased the crop diseases.

Moreover, the farmers have no respect in society these days except on paper. Young men who are engaged in farming activities do not get brides just because he is a farmer. Farmer families are also not an exception in this respect, who hesitate their children to get married to a farmer.

Md. rafi: Please tell us about your large collections of tubers; also about the seed bank that is run by your farmer's group.

Manuel PJ: Practically, it is very difficult to establish a seed bank because each seed has its own storage period limits. The seed becomes unusable after a particular period. So, we should only be able to keep such seeds that are suitable to the existing local weather conditions and also after a proper analysis of the market trends. We need to trade off the seeds within the same season. Paddy seeds can be used to convert to rice, but tubers can't. It is better to keep such tubers' seeds in the seed bank that has a demand at the market. Either the tubers should be kept in the farmland or it becomes a waste.

But, the seed banks are necessary since it makes the exchange of seeds possible between farmers who cultivate and those who require the seeds. Seed banks play a role of middleman here. They should also be capable enough to exchange different information about the seeds such as the details of the availability of the seeds, the merits, issues and values of farming such seeds etc.

Md. Rafi: Will we be able to adopt the methods of traditional farming practices in the present time and context and if so, to what extent?

Manuel PJ: The pragmatic application of traditional knowledge is often very difficult. But we would have solved many issues prevailing in the agriculture sector if all that knowledge could be practically applied. One of the important traditional knowledge is 'to do farming looking at the seasons'. Each seed has its own period of growth till the time of harvest. A farmer should be certain about each phase of that period of growth. If we need to harvest on the targeted time then we need to sow the seed on the correct time of the season.

Climate change has affected the practical adaptation of knowledge of the tradition. For instance, the tradition says that "we get no harvest if the paddy seeds were sown after the Malayalam month of '28th of Chingam' (August-September)". But, we have now changed the sowing of paddy seeds to the end of next month, 'Kanni' (September-October) due to change in the monsoon pattern. Thus, the changes are inevitable in the traditional agricultural practices also. We need to update the traditional knowledge in the course of time. This is the responsibility of various agriculture universities but it is not happening. It is not practical for a farmer to do research and farming for their livelihood simultaneously.

Md.Rafi: How is the use of the chemical pesticides and fertilizers becoming detrimental to farmers and the farming sector?

Manuel PJ: For instance, it takes four days of work for a farmer to prepare the organic manure called 'Jeevamritham'. But, he or she can save both time and labour to get 'urea' from a fertilizer shop. In fact, the agriculture experts are also hiding the side effects of chemical fertilizers. The ratio of the deadly chemical elements such as cadmium and arsenic was found to be very high in the chemical fertilizers used in the past. The number of kidney patients increased in those areas where the farmers started cultivating by using these fertilizers with high concentration. People are also greedy and not willing to acknowledge the ill effects of using chemical pesticides. In my view, chemical pesticides are harmful even though they are used in a scientifically suggested proportion. The pesticides are detrimental to some of the friendly-insects when sprayed aiming on the pests. On top of that, farmers do not use the pesticides in a recommended proportion, going beyond permissible limits in most cases.

Md. Rafi: How is agriculture and ecology interconnected?

Manuel PJ: Farming itself is an act of ecological conservation. A farmer protects domestic animals and birds; we conserve different species of plants, fruit trees as well as other trees on the farming land. As farmers, we do such activities to conserve the erosion of topsoil also; we prepare rain-harvest pits to drain water into the earth. Most of the farmers these days return back to mixed farming from monoculture farming. Mixed farming reduces pest attacks, and farmers may not face a loss, even if one crop fails to get a good price in the market.

Md. Rafi: What is your message to the coming generation?

Manuel PJ: Please show some respect to farmers and be aware that human existence depends, to a certain extent, on the hard work of the farmers.

Muhammed Rafi and K.G.Ramachandran are staff of Keystone Foundation.

THE KASHMIR FLYCATHER

Ficedula subrubra

By Habeeba Fathima

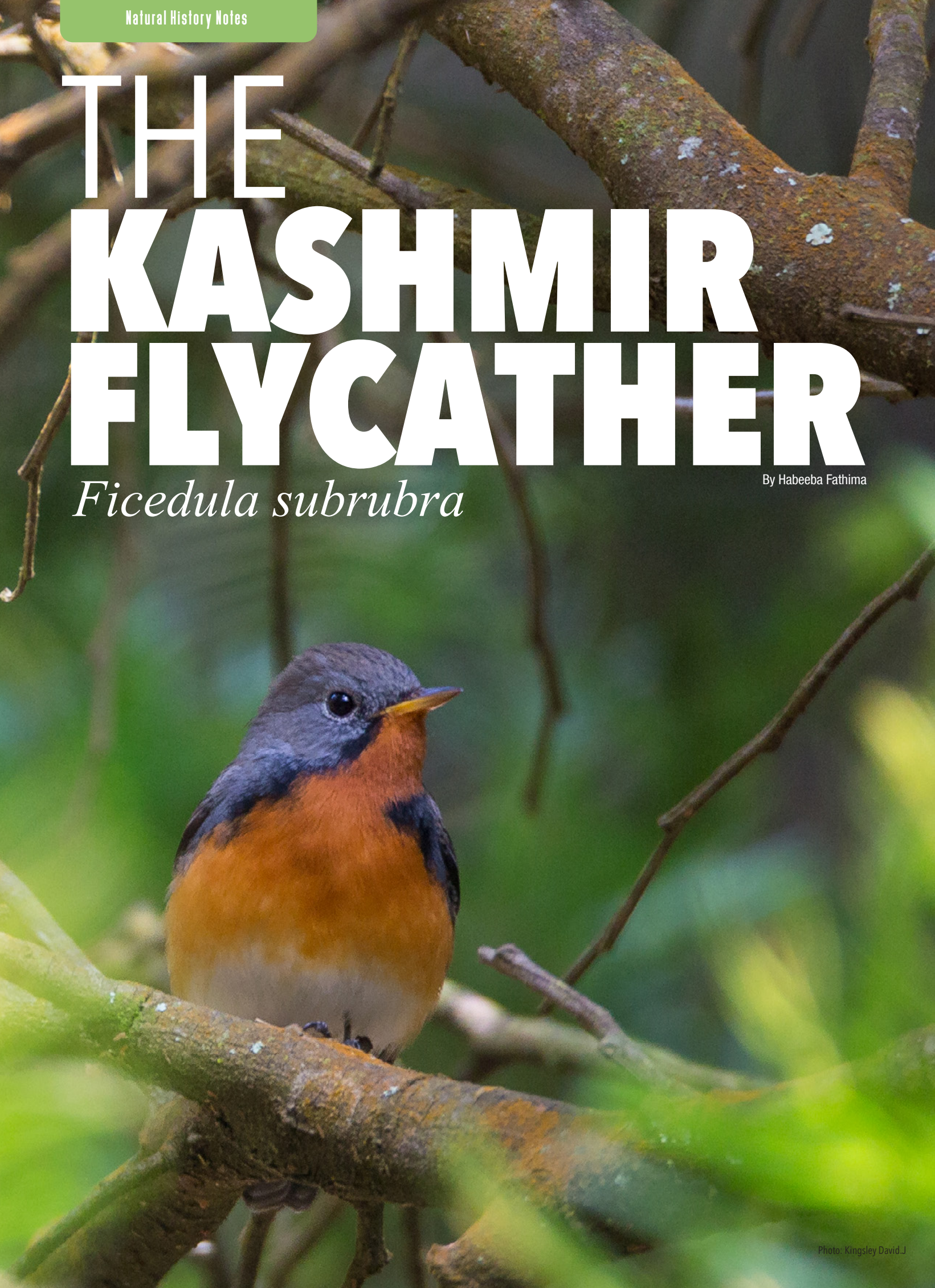


Photo: Kingsley David.J

Bird migration is one of nature's greatest wonders and has always left humankind fascinated. The migration flights of birds follow specific routes, sometimes quite well defined over long distances. Many bird migrants, however, travel along broad airways. A single population of migrants may be scattered over a vast territory to form a broad front hundreds of miles in width. Such routes are determined not only by geographical factors—e.g., river systems, valleys, coasts—and ecological conditions but are also dependent upon meteorological conditions, i.e., birds change their direction of flight in accordance with the direction and force of the wind.

Small passerine (perching) birds migrate across 1,000 kilometres (620 miles) or more of sea in areas such as the Gulf of Mexico, the Mediterranean Sea, and the North Sea. American golden plovers, wintering in the Pacific, fly directly from the Aleutian Islands (southwest of Alaska) to Hawaii, the 3,300-kilometre (2,050-mile) flight requiring 35 hours and more than 250,000 wing beats. Most migrations occur at relatively low altitudes. Small passerine birds often fly at less than 60 metres (200 feet). Some birds, however, fly much higher. Migrating passerines, for example, have been observed at altitudes as great as 4,000 metres (14,000 feet). The highest altitude recorded thus far for migrating birds is 9,000 metres (29,500 feet) for geese near DehraDun in northwest India.

Birds from 29 different countries fly to India every year during winter signifying the beginning of migration. During this season the birds from India's great Himalayas also fly down to the Western Ghats. It is during this season on the 03 November 2021, I was on my course to spot the Kashmir flycatcher in a patchwork habitat consisting of tea cultivation, scattered trees, and a newly restored patch of shola in the Keystone Foundation campus. I heard a loud and clear bird call: "sweet-sweet," like the call of an Indian Robin *Saxicoloides fulicata*. The calling bird was perched on a silver oak tree in the middle of the tea plantation. After one minute, the call was repeated. When I approached closer to the songster, it uttered the call again, and took off from its perch, uttering a "tit-tee," call in flight. The perched bird repeatedly made short sallies for insects from the tree into the plantation. I had almost ignored the bird thinking of it as the Robin. But on a closer notice the bird in question had orange spotting/mottling on the breast, the orange extending up to the flanks. It had a white belly. I then knew I had spotted a lifer (a term used to describe the first sighting of a species). The following is a report on the Kashmir Flycatcher and its migration.

The Kashmir Flycatcher *Ficedula subrubra* is endemic to the Indian Subcontinent. At one time it was considered a subspecies of the red- breasted flycatcher, *Ficedula parva*. It is a Red Data species categorised as Vulnerable by the IUCN. It breeds in the Kashmir area and Pir Panjal Range and is known to winter in the Western Ghats and Sri Lanka. This is an insectivorous species which breeds in the north-west Himalayas in the Kashmir region of the Indian Subcontinent. The Kashmiri flycatcher is a winter visitor to peninsular India and has been recorded in the Nilgiris Biosphere on numerous occasions in the past. During its stay in the Nilgiris, the Kashmir Flycatcher is spotted in gardens, forest plantations, tea-estates, and edges of forest zones.

The breeding season begins in the early-summer months of May and June, in North-western Kashmir. In many places the male of the species is comparatively more commonly spotted than the female. The bird feeds on insects and caterpillars and spends most of its time foraging for food until the end of the migration. The bird itself is not easy to spot; small and very agile, it hides inside small trees and inside dense foliage; it restricts itself to a small area and remains in the same place until the end of migration; it does not share food habits and location with any of the birds found in the Nilgiris.

Migration of this bird is recorded at 1200 to 2400 metres above sea-level and remains distributed along temperate and mixed deciduous forest. Global distribution of the bird is India, Srilanka, Pakistan, and Nepal. In India, it has been sighted at Dachingham, Sonamarg, Srinagar, and Shankaracharya Reserved Forest in Jammu & Kashmir, Kalesar National Park in Haryana, Sultanpur in Uttar Pradesh, Lalbagh Botanical Garden, Mugguru Forest, and BR Hills in Karnataka, Munnar in Kerala, and Ooty Botanical Gardens, Coonoor, and Kotagiri in Tamil Nadu.

The population is estimated to number 2,500-9,999 individuals based on an assessment of available records and surveys by BirdLife International. Declining habitats due to urban construction and buildings and habitat destruction are defined as the primary causes along with anthropogenic stress (Zarri & Rahmani 2008). In the Nilgiris, the low economic feasibility of existing wattle plantations has led to increased rates of clearance, bringing reductions in suitable wintering habitat.

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About the Author

Habeeba is a Conservation Educator and staff at Keystone Foundation.

Photo: Natasha Rajpurohit

THE BUZZ
NNHS DIARY

2021 was a hard mountain to climb and as we stand at the end of the year here is a glimpse into the NNHS Diary for the latter half of the year.

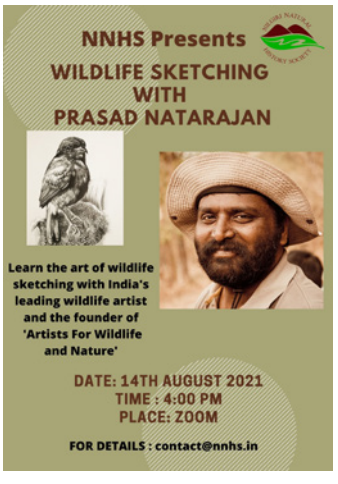
During August we conducted a workshop for all the natural history enthusiasts and artists alike. Prasad Natarajan, India's leading wildlife artist and founder of the Artists for wildlife and nature gave the attendees a demonstration on how to observe wildlife and sketch them. With many of the attendees intrigued we conducted a month-long workshop on the basics of drawing body structure, and habitat.

September kick-started with preparation for the Big Butterfly month. We conducted an online event where Mr. Nagaraj V., Photographer and butterfly enthusiast spoke on 'Why Butterflies?' he elaborated on why Butterflies are important for the ecosystem and his time spent documenting these winged jewels. We continued into the butterfly month by conducting a nature education program at Aracode, Garkiyoor.

A group of students from the tribal residency school were taken out on a guided butterfly trail and were introduced to the concepts of ecology and behavior of butterflies. Then a brief origami workshop was held where students learned how to fold butterflies. It would be safe to say that the students were quite mesmerized.

October brought the wildlife week and NNHS celebrated the wildlife week by organizing a photography competition with two themes: wildlife in waste and comedy. We received multiple entries but one image had all of our hearts- the lion-tailed macaque

with a broken glass bottle by Renuka Vijayaraghavan. As a part of our wildlife week celebrations, we also conducted a nature trail into the Longwood shola. The group of young students from Kaircombai govt school who attended the nature trail left talking about their newfound aspirations of becoming ecologists.



The end of the year brought on us heavy showers and we invited the showers with a lecture by Dr.Aparna Watve and Dr. Rohan Shetty. The lecture took place in the Keystone Foundation campus with a screening on Zoom for people wanting to attend online. We got a peek into the lesser-known habitats of Sahyadris and learned about the scientific method of tree ringing and its association with climate change. During December,

for the enthusiastic students of Kaircombai govt. school one of our volunteers, Ryan Sathish led a nature trail on the beautiful school campus. The students were amazed to see Ants, Termites, Black Eagle, Skittering Frogs, Woolly Necked Storks, and Bulbuls. The last event of the year was with a group of 12 from RTI International, Coimbatore who visited the campus and learned about the different areas of work that Keystone Foundation is associated with. The journey was long but equally fun. We had some to share and some to learn. And with this note, we bid farewell to this year with a promise to bring in more lectures, activities, and trails in the coming year.

Habeeba Fathima

The newsletter of the Nilgiri Natural History Society (NNHS) aims to cover the many dimensions of natural history - conservation issues, lay observation, cultural representations and traditional knowledge. The newsletter will carry communications about research in Keystone Foundation in the areas of conservation, environmental governance, culture, livelihoods and enterprise. In keeping with the pan Nilgiri Biosphere Reserve (NBR) nature of the Society, space will be allocated for reporting of events/views from elsewhere within the country and from outside the country. Additionally a section will be devoted to research summaries by students who work in the region of the NBR. Guest editors will be invited for special editions. News items gleaned from printed sources about the NBR will be featured. Separate sections will carry information on NNHS and Bee Museum activities. The species focus will feature species of special conservation status, endemic to the Western Ghats and present in the NBR.

SUBMISSION OF ARTICLE

The NNHS newsletter articles are reviewed by the Chief Editors and a member of the editorial board. Articles are invited for the following section: i. Natural History News from India (400 words); ii. Natural History News from the World (400 words); iii. Research Initiatives in the NBR - student contributions (400 words); iv. Species focus (250words). Articles should be submitted by email to: **contact@nnhs.in**

Authors should provide complete information including an email address and phone numbers. Articles needs to be submitted in standard word processor formats only. Rich text content and other forms are not accepted. Figures and texts need to be sent in seperately with adequate labelling and numbering in context to the articles sent. Pictures in the manuscript also need to sent in seperately in TIFF, JPEG or PNG formats with resolution not less than 250 dpi

Reference style:

Papers in Journals and other periodicals

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SPECIES FOCUS

Photo : Immanuel

The Nilgiri salea *(Salea horsfieldii)*

Salea horsfieldii, commonly known as Horsfield's spiny lizard or the Nilgiri salea, is a species of lizard in the family Agamidae. The specific name, horsfieldii, is in honor of American naturalist Thomas Horsfield. The species is endemic to the Nilgiri Hills of India. It is found mainly in high-altitude grassy hills. The color is pale olive above but varies from green to brown, with irregular dark-brown cross bands, often broken up by a band of light-brown color running along the sides of the back. The larger scales on the sides are frequently white, and a blackish band edged below in white extends from the eye, through the tympanum, to the foreleg. The tail is banded with regular dark brown and creamy bands.

Photo: Habeeba Fathima